

**REMARKS**

In accordance with the foregoing, the specification has been amended to improve form and provide improved correlation with the drawings and claims. Claims 1, 3, and 11 have been amended, claims 9 and 10 have been canceled without prejudice or disclaimer, claims 1 through 8 and 11 through 23 are pending, and claims 1 through 8 and 11 are pending and under consideration. No new matter is presented in this Amendment.

**OBJECTIONS TO THE DRAWINGS:**

The Examiner objected to FIGs. 7A and 7B as not permitting one to see the effect of the drawings. Further, the Examiner objected to FIG. 1 as showing only that which is old. A replacement sheet showing FIGs. 7A and 7B are submitted herewith.

And, a replacement sheet showing FIG. 1 labeled as "Related Art" is submitted herewith. It is respectfully requested that these objections be withdrawn.

**OBJECTIONS TO THE ABSTRACT:**

The Examiner has objected to the Abstract, at page 3, for including the phrase "occurs in at least one of the heat absorption layer and the separation layer[.]" Applicants assert that such language is appropriate and not awkward because it states that a volume change occurs in at least one of the two layers, i.e., the volume change occurs in the heat absorption layer, the separation layer, or both of the heat absorption and the separation layers. The language proposed by the Examiner could be read and interpreted to mean that the volume change occurs in only one or the other of the two layers, i.e., in the heat absorption layer or the separation layer, but not both. As such, the language of the Abstract is correct as indicated by the specification in at least paragraph [0049] stating "the volume of the separation layer 20 may change with the heat absorption layer 15, or may change alone." Therefore, the language of the Abstract is correct as written and need not be changed. It is respectfully requested that this objection to the Abstract be withdrawn.

**OBJECTIONS TO THE SPECIFICATION:**

The Examiner has objected to paragraphs [0007], [0012], [0016], [0019], and [0051] due to informalities. Replacement paragraphs [0007], [0012], [0016], and [0051] have been provided.

With regard to paragraphs [0007] and [0012], Applicants have amended blu-ray disc to BLU-RAY DISC and assert that sufficient generic language is provided in such paragraphs to

indicate the nature of the recording discs.

With regard to paragraphs [0016] and [0051], Applicants have provided replacement paragraphs.

With regard to paragraph [0019], as stated above with regard to the Abstract, the language of “at least one of the top and bottom” is appropriate. In this case, a dielectric layer may be disposed on the top, the bottom, or on both the top and the bottom of the heat absorption layer 15 as indicated by at least paragraph [0047]. The language proposed by the Examiner may be interpreted as stating that a dielectric layer may be disposed on the top or the bottom and not both. As such, the language of paragraph [0019] is correct and need not be changed.

It is respectfully requested that these objections to the specification be withdrawn.

**REJECTIONS UNDER 35 U.S.C. §112:**

Claims 1-11 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, the Examiner states that the phrase “at least one of the heat absorption layer and the separation layer” is so awkward as to render the claim indefinite. Page 5 of the Office Action. As asserted above, such language is appropriate and not awkward because it states that a volume change may occur in at least one of the two layers, i.e., the volume change occurs in the heat absorption layer, the separation layer, or both of the heat absorption and the separation layers. However, without conceding the correctness of the Examiner’s rejection, claim 1 has been amended such that this objection is moot.

With further regard to claim 1, the Examiner states that the language that a “heat absorption layer” that “absorbs heat irradiated from a beam” is indefinite as the layer absorbs light and not heat. Without conceding the correctness of the Examiner’s rejection but to expedite issuance of the application, claim 1 has been amended to recite that “a heat absorption layer which is coated on the master substrate and absorbs heat energy irradiated from a beam[.]” One of ordinary skill in the art would understand such recitation of the feature. Thus, it is respectfully requested that such rejections of claim 1 be withdrawn.

The Examiner has rejected claims 3-5 as “the heat absorption layer is formed of an alloy

layer” renders the claim indefinite. Without conceding the correctness of the Examiner’s rejection but to expedite issuance of the application, claim 3 has been amended to recite that “the heat absorption layer comprises an alloy layer[.]” It is respectfully requested that these rejections of claims 3-5 be withdrawn.

The Examiner has rejected claim 6 as the phrase “on at least one of top and bottom surfaces of the heat absorption layer” is so awkward as to render the claim indefinite. However, as described above, such language is appropriate and not awkward. Such recitation indicates that the dielectric layer may be disposed on the top surface, the bottom surface, or both the top and bottom surfaces of the heat absorption layer. Thus, it is respectfully requested that this rejection of claim 6 be withdrawn.

Further, it is requested that these rejections be withdrawn with respect to claims 7-11 by virtue of their dependency.

**REJECTIONS UNDER 35 U.S.C. §102:**

**Claims 1 and 11** are rejected under 35 U.S.C. §102(b) as being anticipated by Van Liempd et al. (U.S. Patent No. 5,214,632). Van Liempd et al. discloses a retention layer 3 disposed on an expansion layer 2 disposed on a substrate 1. Col. 5, lines 11-34. The expansion layer 2 and the retention layer 3 together constitute the recording double layer 4. Col. 5, lines 30-33. “The temperature in both layers [i.e., the expansion layer 2 and the retention layer 3] increases to far above the glass transition temperature of [the retention] layer 3. The layer 2 and 3 expand as a result of the rise in temperature, layer 2 expanding more strongly than layer 3 due to the higher coefficients of thermal expansion.” Col. 5., lines 45-49. Although Van Liempd describes the expansion layer 2 and the retention layer 3 in terms of relative coefficient of thermal expansion, Van Liempd does not disclose volume changes in such layers in terms of relative melting temperatures.

In contrast, **claim 1** recites that “a melting point of the heat absorption layer is  $T_1$ , a melting point of the separation layer is  $T_2$ , when the part on which the beam is irradiated on the heat absorption layer has a temperature of  $0.5T_1$  or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than  $T_2$  and lower than  $0.5T_1$ , a volume change occurs in the separation layer and a pit is formed.” Van Liempd does not disclose, inherently or explicitly, such relationships of melting temperatures and volume changes. Such relationships cannot be derived from the discussion of

coefficients of thermal expansion of Van Liempd. As such, Van Liempd cannot anticipate claim 1. Therefore, it is respectfully requested that this rejection be withdrawn and that claim 1 be allowed to issue.

With regard to **claim 11**, claim 11 is allowable for at least reasons similar to claim 1 as claim 11 depends upon and incorporates the features of claim 1. Therefore, it is respectfully requested that this rejection be withdrawn and that claim 11 be allowed to issue.

**Claims 1-3, 6, 7, and 9-11** are rejected under 35 U.S.C. §102(b) as being anticipated by Kuwabara et al. (JP 2002-365806). Kuwabara describes a method of minute pattern formation that does not anticipate the invention as recited in the claims. The Examiner states that “the heating of the light-to-heat absorption layer will transfer that heat to the separation layer as seen in Figure [1]. This will inherently result in a volume change in at least one of the separation layer or the heat absorption layer.” Office Action at page 8. However, Applicants respectfully assert that this assumption is incorrect. First, Kuwabara does not mention a volume change in any of the layers. Second, temperature increase does not inherently lead to volume increase, i.e., the volume may very well stay the same, but the pressure in the area that is melted may increase. Third, none of the figures of Kuwabara show a volume increase. In contrast and as taught by Kuwabara, the layer 3 is heated via a laser beam to induce a chemical reaction in the heat reactive material layer 4. See paragraph [0023]. The layer 4 is changed to a minute portion 6 that does not react with a developing solution. *Id.* The remaining portion of layer 4 reacts with the light to form the layer 6' that is removable by the developing solution. *Id.* Upon developing, the layer 6' is removed to leave behind part of the heat reactive layer 6. *Id.* See paragraph [0023] and FIG. 4. Thus, no volume change is inherent in the disclosure of Kuwabara.

In contrast, **claim 1** recites that a “a melting point of the heat absorption layer is T1, a melting point of the separation layer is T2, when the part on which the beam is irradiated on the heat absorption layer has a temperature of 0.5T1 or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than T2 and lower than 0.5T1, a volume change occurs in the separation layer and a pit is formed [.]” As described above, Kuwabara does not teach, inherently or explicitly, such feature of claim 1. Thus, Kuwabara cannot anticipate claim 1. Therefore, it is respectfully requested that this rejection be withdrawn and that claim 1 be allowed to issue.



**Claims 2, 3, 6, 7, and 9-11** are dependent upon and incorporate the features of independent claim 1. Claims 9 and 10 have been cancelled without prejudice or disclaimer. As such, claims 2, 3, 6, 7, and 11 are patentable for at least reasons similar to claim 1. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 2, 3, 6, 7, and 11 be allowed to issue.

**Claims 1, 3-7, and 9-11** are rejected under 35 U.S.C. §102(b) as being anticipated by Terao et al. (U.S. Patent No. 5,368,986). Terao merely discloses an information recording medium. However, the Examiner states, at page 9 of the Office Action, that the optical medium of Terao “may be considered a recorded master because the information contained within the recording layer may be reproduced and reused in the manufacture of an information storage medium (i.e., mp3 files).” Applicants respectfully assert that such extension of the term recorded master is unreasonable as one skilled in the art would not understand the term recorded master in such a way. Thus, Terao is inapplicable as a reference against the invention as claimed.

Further, the Examiner characterizes the volume change as an intended use and inherent in the device. However, Applicants respectfully assert that such characterization is incorrect. The volume change of the at least one of the heat absorption layer and the separation layer according to a temperature of a part on which the beam is irradiated is a property of the materials claimed. Further, claim 1 recites that “a melting point of the heat absorption layer is  $T_1$ , a melting point of the separation layer is  $T_2$ , when the part on which the beam is irradiated on the heat absorption layer has a temperature of  $0.5T_1$  or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than  $T_2$  and lower than  $0.5T_1$ , a volume change occurs in the separation layer and a pit is formed [.]” which is not disclosed explicitly or inherently in Terao. Thus, Terao cannot anticipate claim 1. Therefore, it is respectfully requested that this rejection be withdrawn and that claim 1 be allowed to issue.

**Claims 3-7 and 11** are dependent upon and incorporate the features of independent claim 1. Claims 9 and 10 have been cancelled without prejudice or disclaimer. As such, claims 3-7 and 11 are patentable for at least reasons similar to claim 1. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 3-7 and 11 be allowed to issue.

#### **REJECTIONS UNDER 35 U.S.C. §103:**

**Claims 2 and 3** are rejected under 35 U.S.C. §103(a) as being unpatentable over Van

Liempd et al. (U.S. Patent No. 5,214,632) in view of Ando (U.S. Patent No. 4,586,173). With regard to claims 2 and 3, the Examiner states that the motivation combining Van Liempd and Ando would be "to provide a layer that could be patterned in a way needed to provide extra markings or depth to the pits that would be formed on the stamper." Office Action at page 11. However, the Examiner fails to establish a prima facie case of obviousness because such expression of motivation is only based on impermissible hindsight. Neither of the references teaches, suggests, or provides motivation for the combination suggested by the Examiner. As such, the combination of Liempd in view of Ando is merely piecemeal construction of the invention as recited in claims 2 and 3.

Further, **claims 2 and 3** depend upon and incorporate the features of independent claim 1 and are patentable for at least similar reasons as claim 1. Specifically, Van Liempd and Ando do not disclose, inherently or explicitly, that "a melting point of the heat absorption layer is  $T_1$ , a melting point of the separation layer is  $T_2$ , when the part on which the beam is irradiated on the heat absorption layer has a temperature of  $0.5T_1$  or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than  $T_2$  and lower than  $0.5T_1$ , a volume change occurs in the separation layer and a pit is formed" as recited in claim 1. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 2 and 3 be allowed to issue.

**Claims 2, 3, 6, and 7** are rejected under 35 U.S.C. §103(a) as being unpatentable over Van Liempd et al. (U.S. Patent No. 5,214,632) in view of Kuwabara et al. (JP 2002-365806).

**Claims 2, 3, 6, and 7** depend upon and incorporate the features of independent claim 1 and are patentable for at least similar reasons as claim 1. As described above, Van Liempd and Kuwabara do not disclose, inherently or explicitly, that "a melting point of the heat absorption layer is  $T_1$ , a melting point of the separation layer is  $T_2$ , when the part on which the beam is irradiated on the heat absorption layer has a temperature of  $0.5T_1$  or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than  $T_2$  and lower than  $0.5T_1$ , a volume change occurs in the separation layer and a pit is formed" as recited in claim 1. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 2, 3, 6, and 7 be allowed to issue.

**Claim 8** is rejected under 35 U.S.C. §103(a) as being unpatentable over Terao et al. (U.S. Patent No. 5,368,986), as applied to claim 1, in view of Yamada et al. (U.S. Patent No.

5,255,260).

**Claim 8** is rejected under 35 U.S.C. §103(a) as being unpatentable over Kuwabara et al. (JP 2002-365806), as applied to claim 1, in view of Yamada et al. (U.S. Patent No. 5,255,260).

With regard to **claim 8**, Yamada fails to cure the deficiencies of Terao with respect to independent claim 1, from which claim 8 depends. Further, Yamada fails to cure the deficiencies of Kuwabara as described above. Specifically, Terao in view of Yamada as well as Kuwabara in view of Yamada fail to disclose, inherently or explicitly, that “a melting point of the heat absorption layer is  $T_1$ , a melting point of the separation layer is  $T_2$ , when the part on which the beam is irradiated on the heat absorption layer has a temperature of  $0.5T_1$  or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than  $T_2$  and lower than  $0.5T_1$ , a volume change occurs in the separation layer and a pit is formed” as recited in claim 1. Therefore, it is respectfully requested that these rejections of claim 8 be withdrawn and that claim 8 be allowed to issue.

**Claims 4 and 5** are rejected under 35 U.S.C. §103(a) as being unpatentable over Kuwabara et al. (JP 2002-365806), as applied to claim 3, in view of Uchiyama et al. (U.S. Patent No. 4,849,304).

**Claims 4 and 5** depend upon and incorporate the features of independent claim 1. As such, claims 4 and 5 are patentable for at least similar reasons as claim 1. Further, Uchiyama fails to cure the above-described deficiencies of Kuwabara. Specifically, Uchiyama fails to disclose, inherently or explicitly, that “a melting point of the heat absorption layer is  $T_1$ , a melting point of the separation layer is  $T_2$ , when the part on which the beam is irradiated on the heat absorption layer has a temperature of  $0.5T_1$  or higher, a volume change occurs in the heat absorption layer and the separation layers, and when the temperature of the part is equal to or higher than  $T_2$  and lower than  $0.5T_1$ , a volume change occurs in the separation layer and a pit is formed” as recited in claim 1. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 4 and 5 be allowed to issue.

Based on the foregoing, this rejection is respectfully requested to be withdrawn.

#### **CONCLUSION:**

There being no further outstanding objections or rejections, it is submitted that the

application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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